I claim:

1. An optical imaging system comprising:

an object imaging means for forming an intermediate image of an object image, said object imaging means producing particular aberrations in the intermediate image;

means for reversing at least some of the aberrations in the intermediate image comprising a convergent reflective medium positioned proximate the intermediate image; and

a re-imaging means for re-imaging the intermediate image reflected by said reflective medium, said re-imaging means producing image aberrations similar to the aberrations produced by said object imaging means, thereby substantially cancelling the aberrations reversed by said reversing means in the re-imaged intermediate image.

2. The system of claim 1 wherein said convergent reflective medium comprises a concave mirror.

[3. The system of claim 2 wherein said concave mirror further comprises a Fresnel structure formed on the mirror surface.]



4. The system of claim 2 wherein said concave mirror further comprises a concave mirror substrate having a front surface and a back surface provided with a reflective coating, wherein said mirror substrate corrects optical aberrations in said intermediate image produced by said object imaging means, and precorrects for optical aberrations produced by said re-imaging means after said intermediate image is reflected by said reflective coating.

5. The system of claim 1 wherein said convergent reflective medium comprises a flat Fresnel mirror.

[6. The system of claim 1 further comprising a beam splitter positioned between said object imaging means and said reflective surface for imaging the intermediate image reflected by said reflective medium to said re-imaging means.]

7. The system of claim 1 wherein said means for forming an intermediate image comprises a projection means which produces a modulated scanning light beam to form the intermediate image, and said convergent reflective medium comprises a concave projection screen positioned substantially at the intermediate image.

8. The system of claim 7 wherein the light forming said intermediate image has a predetermined cone of incidence, and said concave projection screen comprises means for redistributing the light incident on any point f the screen surface into a cone of exodus larger than said cone f incidence.

9. The system of claim 1 wherein the light forming said intermediate image has a predetermined cone of incidence, and said means for reversing further comprises means for redistributing the light incident on any point of said convergent reflective medium into a cone of exodus larger than said cone of incidence.

**10.** An optical system, comprising:

a. an imaging means for forming an intermediate image, wherein said imaging means produces at least one first aberration in light exiting said imaging means;

b. a means for substantially reversing at least one said first aberration; and

c. a re-imaging means for re-imaging said intermediate image, wherein said re-imaging means produces at least one second aberration, and said at least one second aberration substantially cancels at least one said first aberration reversed by said reversing means.

**11.** An optical system as recited in claim **10**, wherein said imaging means comprises a positive lens, wherein said positive lens produces at least one said first aberration, and said at least one said first aberration produced by said positive lens is similar to at least one said second aberration.

**12.** An optical system as recited in claim **10**, wherein said imaging means forms said intermediate image from an image produced by an electronic imaging device.

**13.** An optical system as recited in claim **10**, further comprising a beam splitter positioned between said imaging means and said means for reversing at least one said first aberration, wherein said beam splitter directs light from said imaging means to said means for reversing at least one said first aberration.

**14.** An optical system as recited in claim **10**, further comprising a beam splitter positioned between said means for reversing at least one said first aberration and said re-imaging means, wherein said beam splitter directs light reflected by said means for reversing at least one said first aberration to said re-imaging means.

**15.** An optical system as recited in claim **10**, wherein said means for reversing at least one said first aberration comprises a convergent reflective medium.

16. An optical system, comprising:

a. an imaging means for forming an intermediate image, wherein said imaging means produces at least one first aberration in light exiting said imaging means;

b. a means for substantially reversing the direction of a center of a light ray bundle exiting said imaging means; and

c. a re-imaging means for re-imaging said intermediate image, wherein said re-imaging means produces at least one second aberration, and said at least one second aberration substantially cancels at least one said first aberration.

17. An optical system as recited in claim **10**, further comprising a light redistributing means positioned proximate to said intermediate image for expanding a cone of light incident on said redistributing means into a larger cone of exodus.

18. An optical system as recited in claim **16**, further comprising a light redistributing means positioned proximate to said intermediate image for expanding a cone of light incident on said redistributing means into a larger cone of exodus.

19. An optical system as recited in claim **10**, further comprising a light redistributing means positioned proximate to said intermediate image, wherein said light redistributing means expands an exit pupil of said re-imaging means.

20. An optical system as recited in claim **16**, further comprising a light redistributing means positioned proximate to said intermediate image, wherein said light redistributing means expands an exit pupil of said re-imaging means.

21. An optical system as recited in claim **17**, wherein said imaging means comprises a modulated scanning light beam to form said intermediate image.

22. An optical system as recited in claim **18**, wherein said imaging means comprises a modulated scanning light beam to form said intermediate image.

23. An optical system as recited in claim **19**, wherein said imaging means comprises a modulated scanning light beam to form said intermediate image.

24. An optical system as recited in claim **20**, wherein said imaging means comprises a modulated scanning light beam to form said intermediate image.

25. An optical system as recited in claim **17**, wherein said light redistributing means is reflective.

26. An optical system as recited in claim **18**, wherein said light redistributing means is reflective.

27. An optical system as recited in claim **19**, wherein said light redistributing means is reflective.

28. An optical system as recited in claim **20**, wherein said light redistributing means is reflective.

29. An optical system as recited in claim **10**, wherein said means for substantially reversing at least one said first aberration comprises a convergent optical element.

30. An optical system as recited in claim **16**, wherein said means for substantially reversing the direction of a center of a light ray bundle exiting said imaging means comprises a convergent optical element.

31. An optical system, comprising:

a. an imaging means for forming an intermediate image;

b. a curved surface proximate to said intermediate image comprising a light redistributing means for expanding a cone of light incident on said surface into a larger cone of exodus; and

c. a re-imaging means for re-imaging said intermediate image, wherein said re-imaging means intercepts a substantial portion of light from said curved surface.

**32.** An optical system, comprising:

a. a modulated scanning beam of light for forming an intermediate image;

b. a light redistributing means positioned proximate to said intermediate image for expanding a cone of light incident on said light redistributing means into a larger cone of exodus; and

c. a re-imaging means for re-imaging said intermediate image.

**33.** An optical system, comprising:

a. a modulated scanning beam of light for forming an intermediate image;

b. a means for re-imaging said intermediate image, wherein said means for re-imaging said intermediate image forms an exit pupil; and

c. a light redistributing means positioned proximate to said intermediate image for expanding said exit pupil.

**34.** An optical system as recited in claim **32**, wherein said light redistributing means is reflective.

**35.** An optical system as recited in claim **33**, wherein said light redistributing means is reflective.

**36.** An optical system as recited in claim **32**, wherein said light redistributing means is concave relative to said scanning beam of light.

**37.** An optical system as recited in claim **33**, wherein said light redistributing means is concave relative to said scanning beam of light.

**38.** An optical system as recited in claim **32**, wherein said light redistributing means comprises an optical element selected from the group consisting of a scattering surfaces, a binary optical surface, a diffractive optical surface, a lenticular surface, a Fresnel surface, a microlens surface, and a holographic surface.

39. An optical system as recited in claim 33, wherein said light redistributing means comprises an optical element selected from the group consisting of a scattering surfaces. a binary optical surface, a diffractive optical surface, a lenticular surface, a Fresnel surface, a microlens surface, and a holographic surface.

40. An optical system as recited in claim 32, wherein said re-imaging means intercepts a substantial portion of light from said light redistributing means.

41. An optical system as recited in claim 33, wherein said re-imaging means intercepts a substantial portion of light from said light redistributing means.

42. An optical system as recited in claim 32, wherein said intermediate image comprises at least one third aberration, and said at least one third aberration is substantially canceled by said means for re-imaging.

43. An optical system as recited in claim 33, wherein said intermediate image comprises at least one third aberration, and said at least one third aberration is substantially canceled by said means for re-imaging.

44. An optical system as recited in claim 32, wherein said re-imaging means comprises a curved surface.

45. An optical system as recited in claim 33, wherein said re-imaging means comprises a curved surface.

46. An optical system as recited in claim 1, wherein said means for forming an intermediate image comprises a projection means comprising a modulated scanning light beam to form said intermediate image.

47. An optical system, comprising:

a. an imaging means for forming an intermediate image, wherein said imaging means produces at least one first aberration in said intermediate image;

b. a means for reversing at least one aberration in said intermediate image, wherein said means for reversing at least one said first aberration comprises a convergent reflective medium; and

c. a re-imaging means for re-imaging said intermediate image reflected by said convergent reflective medium, wherein said re-imaging means produces at least one second aberration similar to said at least one first aberration, thereby canceling said at least one first aberration reversed by said reversing means in said re-imaged intermediate image.

**48.** An optical system as recited in claim **47**, wherein said convergent reflective medium comprises a concave mirror.

**49.** An optical system as recited in claim **47**, further comprising a beam splitter positioned between said convergent reflective medium and said re-imaging means, wherein said beam splitter directs light reflected by said convergent reflective medium to said re-imaging means.

**50.** An optical system as recited in claim **47**, wherein said convergent reflective medium comprises a concave projection screen proximate to said intermediate image, and said means for forming an intermediate image comprises a projection means comprising a modulated scanning light beam to form said intermediate image.

**51.** An optical system as recited in claim **47**, wherein said means for forming an intermediate image comprises a projection means comprising a modulated scanning light beam to form said intermediate image.

**52.** An optical system as recited in claim **47**, wherein said means for reversing further comprises means for redistributing the light incident on a point of said convergent reflective medium into a cone of exodus larger than said cone of incidence.

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**53.** A method of generating an image, comprising:

a. forming an intermediate image, wherein said intermediate image is characterized by at least one first aberration;

b. reversing the sign of said at least one first aberration in said intermediate image with a convergent reflective element; and

c. forming an image from said intermediate image with a re-imaging means, wherein said re-imaging means is characterized by at least one second aberration that is at least similar to said at least one first aberration.

**54.** A method of generating an image as recited in claim **47**, wherein said intermediate image is formed with an imaging means comprising at least one positive optical element, said re-imaging means comprises at least one positive optical element, and said convergent reflective element produces negative aberration contributions that compensate at least one aberration contribution from said positive optical elements of said imaging means and said re-imaging means.

**55.** A method of generating an image as recited in claim **47**, wherein said convergent reflective element comprises an element selected from the group consisting of a convergent mirror and a convergent Fresnel reflector.

**56.** A method of generating an image as recited in claim **47**, wherein said intermediate image is formed proximate to said convergent reflective element.

**57.** A method of generating an image, comprising:

a. forming an intermediate image on a light redistributing screen with a scanning modulated beam of light, wherein said light redistributing screen redistributes light from said beam of light of said intermediate image; and

b. re-imaging said light redistributed from said light redistributing screen so as to form an image of said intermediate image.

**58.** A method of generating an image as recited in claim **57**, wherein said light redistributing screen comprises a curved surface.

**59.** A method of generating an image as recited in claim **58**, wherein said curved surface is concave.

**60.** A method of generating an image as recited in claim **57**, wherein said beam of light comprises a laser beam.

**61.** A method of generating an image as recited in claim **59**, wherein said scanning modulated beam of light is centered proximate to a center of curvature of said curved surface.

**62.** A method of generating an image as recited in claim **57**, wherein the operation of forming an intermediate image comprises scanning each of a plurality of colors, and each color is scanned so as to pre-correct for chromatic aberration by the operation of re-imaging.

**63.** A method of generating an image as recited in claim **57**, wherein said image comprises a virtual image.

**64.** A method of generating an image as recited in claim **57**, wherein said image forms an exit pupil viewable by an eye.

**65.** A method of generating an image as recited in claim **57**, further comprising the operation of converging said light redistributed from said light redistributing screen prior to re-imaging said light.

**66.** An optical system, comprising:

a. a scanning modulated beam of light;

b. a projection surface comprising a light redistributing means, wherein an intensity of said beam of light is modulated to form an intermediate image on said projection surface; and

c. a re-imaging means, wherein said re-imaging means forms a virtual image of said intermediate image from light from said projection surface through an exit pupil viewable by an eye.

**67.** An optical system as recited in claim **66**, wherein said beam of light comprises a laser beam.

**68.** An optical system as recited in claim **66**, wherein said scanning modulated beam of light is substantially focused on said projection surface.

**69.** An optical system as recited in claim **66**, wherein said projection surface is curved and said scanning modulated beam of light is located at a distance approximately equal to a radius of curvature of said projection surface.

**70.** An optical system as recited in claim **66**, wherein said projection surface comprises a surface that absorbs light from said beam of light and emits light as an intermediate image.

71. An optical system as recited in claim **66**, wherein said modulated beam of light comprises polychromatic light and said modulated beam of light is pre-aberrated so as to accommodate chromatic aberration by said re-imaging means.

72. An optical system as recited in claim **66**, wherein said scanning modulated beam of light is located off-axis from said projection surface.

73. An optical system as recited in claim **72**, wherein said intermediate image is formed as an off-axis image.

74. An optical system as recited in claim **66**, further comprising a beam splitter, wherein light from said scanning modulated image source reflects off of said beam splitter, then reflects off of said projection surface, then passes through said beam splitter, and then passes through said re-imaging means.

75. An optical system as recited in claim **74**, wherein said beam splitter comprises an optical element selected from the group consisting of a flat window with a partially reflective coating, a flat multi-stack window, a polarizing beam splitter, and a cube beam splitter.